**Whitepaper Draft**

**Abstract**

The current database solutions employed by the government are becoming increasingly more difficult to scale. A blockchain-based distributed database provides a solution to the scalability problem, as well as improved security and – with the right technology – improved performance.

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**Introduction**

The fact that data is growing came as no surprise to even the newest of IT personnel, but the rate at which that data is growing is catching even the most veteran IT professionals off guard. This is especially true in the IT departments for state and local governments who, thanks to the need to store new types of digital assets for record lengths of time, are facing a data epidemic in their facilities. The challenge is that these agencies have limited budget dollars to provide their IT departments to tackle these problems. State and local government IT needs an innovative approach to cost effectively deal with the problem.1

**1. In-depth explanation of the issue**

Governments, in general, always struggle to adapt to newer technologies due to the massive scale of changes that need to take place. This leaves individuals using their government’s services wasting their time in an ever-evolving world, where millions upon millions of pieces of information are sent and handled ***per second*** in the Digital World.

The current framework that the government uses to facilitate its citizens requests and affairs is a very physical one, dependent on use of paperwork and a lot of human involvement in general. Although some use of technology is involved, more sensitive information is still handled in the “classic” way.

It is often the case that this classic system comes to a complete halt because it cannot process requests fast enough. Thus, unnecessary delays are incurred. Our current world is a rapidly growing one, which means that any heavy traffic issues are going to exponentially grow in the future.

Let’s dissect the issues that this paperwork-based system currently has.

**Speed**

<https://www.thefactsite.com/how-much-time-people-spend-doing-stuff/>

According to these sources, the average person can spend anywhere from 1 to 5 years of their life waiting in line or in a queue.

The main bottleneck of paperwork is the speed at which information can be passed.

This is caused by two­ facts: a *document* takes time to *read*, and it takes time to *write*. The common factor in both of these is a human either reading or writing the document. Parts of this process are sometimes offloaded onto a machine for processing, but for the most part, a lot of human involvement is present.

The speed at which an individual’s request is processed is determined by the speed of the slowest working part of the system; The human brain, which – while efficient at learning new things – is incapable of processing large volumes of information in a short time. This means that the maximum speed at which the system can function is severely limited by direct human involvement.

As an example, let’s do a step-by-step walkthrough of the process of getting a *passport*:

Step 1: Prepare all needed information in the form of **physical documents**.

Step 2: Travel to a building Carrying all of the papers from Step 1

Step 3: Wait in Line.

Step 4: Exchange information (both verbally and through documents) with an employee.

Step 5: Wait 1 – 2 weeks for your physical passport to arrive.

You have to ***physically***go to some government building, ***carrying*** all the necessary information, ***wait*** in line,and ***verbally*** exchange criticalpieces of information with an ***employee*** who will then upload your information to the system.

**Scalability**

The only way to deal with inefficiency is to *Make More*.

*More Buildings, More employees, More Paperwork, More Waiting...*

The bigger this system grows, the more apparent its flaws will be.

The paperwork system suffers when it has to deal with large amounts of information, and it’s going to be much worse in the future as population grows. Scaling up the current system means to add new buildings, or replace the current buildings with bigger ones and fill them with more employees. This is an expensive and slow approach in a world that is rapidly growing and increasing in speed.

**Security**

The biggest issue with paperwork is the fact that it’s made of *paper.* And paper can accidentally tear, burn in a fire accident, or get lost in the chaos after an earthquake. It cannot be easily backed up and privacy is also a concern. If information is backed up into an online database, then it’s put at risk of being attacked and viewed by uninvited parties.

**2. in-depth explanation of the solution**

The proposed system is a decentralized, reward-based system that implements the use of ***legal contracts,*** similar to ***smart contracts*** in the ***Ethereum Blockchain.***

A **Legal Contract** can be considered a sub-type of a smart contract, with the difference that only official recognized parties may make a **legal contract.** This means that at any given time, a user can be confident that they are filling out an official contract, offered strictly by official parties i.e. The Government.

The system will be built on its own blockchain, which will be optimized for relevant services.

It will also implement the use of ***GovCoin***: a specially created cryptocurrency which will be used to reward ***active processing nodes*,** or pay for given services, as well as other purposes mentioned in a later section.

An ***Active Processing Node (APN)*** is any active device on the blockchain, contributing processing power to increase speed, efficiency, and security of the blockchain, as well as ***mining*** for new blocks. Any user can choose to become an **APN**.

As a side note. A user who is an **APN** does not give up the use of their device completely, nor even partially. The process will be designed in a way that makes it least intrusive and power-consuming to the **APN**, which will encourage more users to become **APNs** themselves.

Hence, both the issues of speed and scalability are solved, because as population and demand increases, the number of ***active processing nodes*** will also automatically increase.

**-** **An Example**

In contrast to the example given in the previous section, let’s say you needed to get a passport using this new system:

Step 1: Open an app on your smartphone

Step 2: Send Request

Step 3: Done

You open up your smartphone, open the relevant app or webpage, find the correct service for your needs, check a few boxes to complete your ***legal contract****,* and pay a certain amount of **GovCoin** as processing fee that varies depending on how quickly you want your request to be processed.

A few moments later, your passport has been created and registered to your ID. There is no need for a physical copy. and you can do this from anywhere in the world.

An automated **legal contract** has taken care of everything that an employee would have had to manually ask of the user, and then enter into the system, potentially making a mistake somewhere along the way.

This has the potential to save days’ worth of time ***per individual.***

Since all given information is stored digitally, the risk of misinterpretation is minimal.

There is no waiting in line, and no waiting for potentially weeks while the system clears up its backlog. And no chance for anyone to make a mistake along the way.

**GovCoin**

GovCoin is the official cryptocurrency used throughout the network.

It is similar to other cryptocurrencies like Bitcoin or Ether

GovCoin will be generated as a compensation for users contributing to the network as **APNs.**

At the release of the proposed system, a minimum amount of GovCoin will be available for exchange with local currency or other cryptocurrencies, such that a shortage of GovCoin will not limit any user’s ability to smoothly pass over to the new system.

Its purposes include (but are not limited to) the following:

Any government related payment, such as Taxes.

Exchanging cryptocurrency for digital / non-digital currency

Paying the fee for using a government service.

Paying an extra fee to increase the processing speed of a request.

**- Risks**

Such a system, secure and reliable as it is, has a few risks, such as the ***51% attack,*** in which a group of miners who control more than 50% of the network’s mining rate could interrupt the recording of new blocks, and record new blocks with compromised information.

The risk of such an attack is more noticeable on smaller-scale blockchains. On a government-scale where an entire population is taken into account, there is very minimal risk of a group of attackers gaining the needed computing power.

**3. Implementing the solution:**

Governments around the world always struggle to keep up with what technology has to offer simply because of their massive scale.

The entire infrastructure of a government willing to implement this solution will need to change completely, which is a very time-consuming task capable of generating many errors and vulnerabilities.

The proposed solution takes into account *how* a given government entity will transition into a completely new system in a digital environment.

The official announcement of the government’s transition to the system can only happen once there are enough users to make the system self-sufficient.

**Conclusion**

Governments have outdated methods that rely on outdated technology, being performed by error-prone, and more importantly corruptible humans, and usually relying on a centralized management system.

**References:**

**1:** NEW STRATEGIES TO CONTROL THE DATA EPIDEMIC IN STATE AND LOCAL GOVERNMENT BY GEORGE CRUMP (STORAGE SWITZERLAND, 1/8/14)